

Intel[®] Carrier Grade Server TIGH2U

Configuration Guide System / Spares / Accessories List

March 2008
Rev 1.2

Reference guide to assist customers and the field in ordering the servers,
accessories and spares

~Subject to Change Without Notice~

March 2008

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Revision	Date	Comments
1.0	Dec 2007	Production version
1.1	Feb 2008	Updated for launch with new web links and format changes
1.2	March 2008	Updated to reflect added support for Xeon L5410 processor; updates to accessories/spares section; misc. format/structure changes.

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I. Introduction

Product Description:

The Intel® Carrier Grade Server TIGH2U is the 4th generation of the 2U x 20"D Intel® Telecom and Industrial Grade Rack Server. The TIGH2U supports the 45nm Quad-Core Intel® Xeon® processor 5400 Series with 12M L2 cache, coupling high performance with power efficiency to provide improved performance-per-watt over previous-generation rack-mount servers.

The TIGH2U is a NEBS-3 and ETSI certified product which is suited for a host of applications in the telecom Central Office and industrial environment. The server is targeted to OSS (Operations System and Support), Billing, Provisioning, Softswitch, Media Server, Wireless and Unified Messaging, Call Center and many other applications. It can also support manufacturing, industrial, utility and even military applications where a rugged, highly reliable server is required for harsh environments such as dust, high altitude, fire hazard, earthquake propensity, and high ambient temperatures.

More product information is available at the following websites:

TIGH2U Product Overview

<http://www.intel.com/design/servers/cg/tigh2u/overview.htm>

TIGH2U Product Support

<http://www.intel.com/support/telecom/computeboards/tigh2u/>

Purpose of this Document:

This document provides details on what parts are available for ordering of the Intel® Carrier Grade Server TIGH2U production systems. This includes PID and MM# information for System SKUs, Accessories & Spares, as well as other Intel parts that are supported by the TIGH2U product.

Supported third-party components are not covered by this document, and may be found in the Tested Hardware and Operating System List (THOL) for this product.

II. Production SKUs

The TIGH2U Production SKUs that can be ordered are listed below:

PID Order Code	Description	MM#	Min. Order Qty.
TLHA0201W	Intel® Carrier Grade Server TIGH2U Base Model 0 with AC Power Supply .	890868	1
TLHD0201W	Intel® Carrier Grade Server TIGH2U Base Model 0 with DC Power Supply .	890910	1

See the TIGH2U Base Model 0 Configuration table further down in this section for a list of components included in each base model 0 SKU.

Production SKUs are offered as either an AC or a DC version. The Product Identification code or PID of all SKUs contains the letter "A" for AC or "D" for DC as the 4th digit of the PID.

Both Production SKUs are base model 0 SKUs, (no processor, heatsink, memory, hard drive, power cord, operating system, or plug-in adapters are provided). Those components must be ordered separately as Accessories from Intel or from third party vendors listed in the Tested Hardware and Operating System List (THOL).

Power Cords are not included with the Mod 0 system. For AC Power cords, order the NA - North American power cord below. This power cable is RoHS-compliant.

PID	MM#	Comments
PWRCABLEUS	816324	This AC power cable can be ordered by North America (NA) customers. International customers should procure their specific power cords directly.

Note: Ensure that customers have the appropriate technical support and contact before placing the first order.

TIGH2U Base Model 0 Configuration

All Production SKUs are base model 0 SKUs (no CPU, heatsink, memory, hard drive or plug-in adapters are provided). Those components must be ordered separately as Accessories from Intel or from third party vendors listed in the Tested Hardware and Operating System List (THOL). The below table lists how many of each component is included in the Production model 0 SKU.

The table below lists which components are included in the base model 0 SKUs and which ones must be ordered separately or as optional accessories.

Component Description	AC Mod 0 Configuration	DC Mod 0 Configuration
AC power supply (600 W)	1 included	-
DC power supply (600 W)	-	1 included
Filler Panel in 2 nd power supply bay	1 included	
Chassis (bezel, sheet metal, top cover, PCI carrier)	1 included	
Server Board T5000PAL	1 included	
Bezel (unpainted)	1 included	
PCI Riser FH-FL (two PCI-Express and one PCI-X slots)	1 included	
PCI Riser LP (two PCI-Express slots)	1 included	
FB-DIMM slots (memory not included)	8 included	
Trays for hot-swap 2.5" SAS Hard Disk Drives	6 included	
Filler Panel in optical device bay	1 included	
Rear Panel GbE NIC (Cu) ports (via Server Board)	2 included	
Server Deployment Toolkit (CD)	1 included	
Quick Start Guide	1 included	
Power Cable	Purchase separately ¹	
SW RAID 0/1/10	Included	
HW RAID 5	Optional Accessories ²	
Intel® Z-U130 Value Solid State Drive	Optional Accessory ²	
Mounting kit for Intel® Z-U130 Value Solid State Drive	Optional Accessory ²	
Remote Management Module 2	Optional Accessory ²	
PCI-X FH-FL Riser (3 PCI-X slots)	Optional Accessories ²	
Ethernet I/O Module (dual Gigabit rear ports)	Optional Accessory ²	
SAS I/O Expansion Module (x4 external rear port)	Optional Accessory ²	
Rack Mount Kits	Optional Accessory ³	
Processor (refer to "Details on Ordering Processors")	Purchase separately ⁴	
Heatsink	Accessory or purchase separately	
Memory	Purchase separately ⁴	
Hard Disk Drive	Purchase separately ⁴	
Optical Drive	Purchase separately ⁴	

¹Refer to AC power cord accessory in this section

²Refer to "Production Spares/Accessory List" in section III

³Refer to "Rack Mounting Options" in the Appendix

⁴Should be purchased separately (parts not listed in this document)

Notes on the TIGH2U Model 0 Configuration and Options:

- **PCI Risers**
 - The base configuration comes standard with two PCI Risers supporting up to five PCI slots. These include:
 - One low-profile riser supporting two PCI-Express (PCIe) slots
 - One full-height, full-length riser supporting three slots: two PCIe x4 and one PCI-X.
 - Additional full-height, full-length risers (below) are supported and available as accessories (*refer to "Production Spares/Accessories List" in section III*).
 - PCI-X (active): three independent PCI-X, each with maximum 133 MHz
 - PCI-X (passive): two PCI-X with maximum 100 MHz and one PCI-X (66 MHz) all on a shared PCI bus

- **HW RAID**
 - While SW RAID 0/1/10 is supported on the base configuration, HW RAID 5 support can be enabled via a set of optional accessories (*refer to "Production Spares/Accessories List" in section III*).
 - Components required are **NSCRAID01W** (NSC2U RAID5 Kit - includes the I-Button (license), battery cable) and the **AXXMINIDIMM** (128 MB Mini DIMM registered DDR-2 for RAID cache.)
 - An additional option is the **AXXRSBBU3** (Intel® RAID Smart Battery Backup module provides up to 72 hours of cache memory retention when used with **AXXMINIDIMM**). The cable to connect the battery is included in the **NSCRAID01W** kit.

- **Intel® Z-U130 Value Solid State Drive**
 - Support for the Intel® Z-U130 Value Solid State Drive is available via a selection of optional accessories (*refer to "Production Spares/Accessories List" in section III*).
 - Components required are an Intel® Z-U130 Value Solid State (select desired capacity) as well as a mounting kit (**TMWVSSDRIVE01W**) to mount it inside the chassis.
 - Solid state drives are available in several sizes, enabling an array of product customization options. These drives securely mount inside the chassis offering
 - Storage: independent of traditional disk drives
 - Boot OS from solid state drive; store data on hard drive
 - Store backup image of boot drive
 - Add a server partition to the server
 - Any other customer design options

- **IO Option Modules**
 - These modules, available as optional accessories, attach to the system board via a proprietary connector, and provide additional IO through the rear bulkhead.
 - The **AXXGBIOMO** option module provides two Gigabit Ethernet NICs.
 - The **AXXSASIOMOD** option module provides one x4 external SAS port.
 - Note: Using the AXXGBIOMOD on the TIGH2U may result in non-compliance of NEBS GR-63 short term operating conditions.
 - *For ordering details, refer to “Production Spares/Accessories List” in section III.*

- **Air Filters** are not provided with the TIGH2U base system. If air filters are required by customer, then customer must purchase them separately.

For more detailed information on the TIGH2U, refer to the web links below.

Additional Product Details

Check the following web site for more information on the TIGH2U:

<http://www.intel.com/design/servers/cg/tigh2u/overview.htm>

Support.Intel.Com Users

Product information including specifications, compatibility, user’s guides, drivers, firmware, and software associated with the Intel® Carrier Grade Server TIGH2U is available from Intel Customer Support.

Intel® Carrier Grade Server TIGH2U Support Web Site

<http://www.intel.com/support/telecom/computeboards/tigh2u/>

If you can not access the documents using the links provided, please contact your FAE/FSE for assistance.

Details on Ordering of Processors:

The TIGH2U supports the Quad-Core Intel® Xeon® processor 5400 Series. Ordering details for the CPUs for use in TIGH2U are listed below, and includes both Tray (for OEMs) and Boxed (Retail channel) processors.

Quad-Core Intel® Xeon® Processors Supported by TIGH2U:

Processor Number	Long Life	Cores	Speed	TDP	FSB	Boxed Processor		Tray Processor	
						Product Code	MM#	Product Code	MM#
E5440	Yes	Quad	2.83 GHz	80W	1333 MHz	BX80574E5440P	894824	EU80574KJ073N	893484
L5410	Yes	Quad	2.33 GHz	50W	1333 MHz	BX80574L5410P	894835	EU80574JJ053N	893491

Notes:

- The above processors are tested and supported by Intel and are recommended for long availability and support.
- Heatsinks
 - This product requires Passive heatsinks. The boxed processors listed above include a Passive Heatsink Kit, made of aluminum. Do not use Active Fan Heatsinks, which are provided in some Retail Boxed Processors.
 - For Tray processors, you will need to procure a Heatsink for each processor (see NSCSNKCLP01 in the Spares/Accessories list below). This is a copper heatsink. There are no clips needed for this heatsink, since the heatsink includes captive screws.
 - If ordering other Boxed Processors (not listed here), do not use the fansink, which might be included.

Note that CPU product codes can change, and that the above is a snapshot current as of 3/28/2008. Please consult with your Intel representative for SSpec or MM# which may be needed for ordering the CPU. Any differences in functionality is reported in Monthly Specification updates available on <http://developer.intel.com>.

III. Production Spares/Accessories List

Below are the Spares parts and Accessories that may be ordered with the TIGH2U system. Any of these parts may be ordered as spares for part replacement purposes or as additional customer inventory. Some of the parts below are not included in the TIGH2U system base model and may be ordered as accessories for purposes of upgrading the base model to include additional features.

Note, for a listing of additional compatible accessories, such as Optical Devices for use with the CD-ROM carrier, please refer to the Tested Hardware and Operating System List (THOL).

PID Order Code	Description	Contents	Included in Base Model (Y/N)	MM#	Min. Order Qty
TLIACPSU003	TIGI2U AC Power Supply	AC power supply	Y <i>(one in AC SKU)</i>	880110	1
TLIDCPSU003	TIGI2U DC Power Supply	DC power supply, input power connector	Y <i>(one in DC SKU)</i>	880116	1
NSCSNKCLP01	NSC2U CPU Heatsink	Heatsink (copper)	N	891200	1
HW RAID					
NSCRAID01W	NSC2U RAID5 Kit	I-Button (license), battery cable <i>(battery or mini-DIMM not included)</i>	N	890202	1
AXXRSBBU3	Intel® RAID Smart Battery Backup module: for use with Intel® Integrated Server RAID (requires NSCRAID01W plus mini DIMM), provides up to 72 hours of cache memory retention when used with AXXMINDIMM.	Battery backup kit	N	883471	5 <i>(order in multiples of 5)</i>
AXXMINDIMM	128 MB Mini DIMM registered DDR-2 for RAID cache. Note: enabling RAID capability also requires Intel RAID Activation Key–NSCRAID01W	Mini-DIMM	N	881258	5 <i>(order in multiples of 5)</i>
Remote Management					
AXXRMM2	Intel® Remote Management Module 2 (RMM2) - Single Pack	RMM2 with GCM (single-pack)	N	894383	1
AXXRMM2BULK	Intel® Remote Management Module 2 (RMM2) – 10-Pack	RMM2 with GCM (10-pack)	N	894385	10 <i>(specify '1' for each 10-pack)</i>

Production Spares/Accessories List (continued)

PID Order Code	Description	Contents	Included in Base Model (Y/N)	MM#	Min. Order Qty
PCI Risers and I/O Options					
ASR2500FHR	SR2500 (2U) Full Height PCI-Express riser (two PCI-Express slots, one PCI-X slot)	Riser	Y	880515	1
ADRACRIS	SR2500 (2U) Full Height PCI-X "active" high performance riser card (three PCI-X slots)	Riser	N	856546	1
ADRPCIXRIS	SR2500 (2U) Full Height PCI-X "passive" riser card (three PCI-X slots)	Riser	N	863135	1
FSR2500LPR	Two-slot Low Profile PCI-Express riser	Riser	Y	880516	1
AXXGBIOMOD	Dual Gigabit Ethernet I/O Module	Dual Gigabit rear ports	N	880518	1
AXXSASIOMOD	Four-port external SAS I/O Expansion Module	x4 external rear port	N	880517	1
Solid State Drives					
TMWVSSDRIVE01W	Mounting kit for Intel® Z-U130 Value Solid State Drive <i>Requires Intel® Z-U130 Value Solid State Drive (purchased separately).</i>	Interposer board, cable, mounting screws (<i>flash drive not included</i>)	N	893165	1
SSDUSMS0001GL10	Intel® Z-U130 Value Solid State Drive - 1 GB, Low Profile Connector <i>Requires TMWVSSDRIVE01W</i>	1 GB Module – Low Profile Connector	N	890945	10
SSDUSMS0002GL10	Intel® Z-U130 Value Solid State Drive – 2 GB, Low Profile Connector <i>Requires TMWVSSDRIVE01W</i>	2 GB Module – Low Profile Connector	N	890943	10
SSDUSMS0004GL10	Intel® Z-U130 Value Solid State Drive - 4 GB, Low Profile Connector <i>Requires TMWVSSDRIVE01W</i>	4 GB Module – Low Profile Connector	N	890941	10
Spares					
TLHBEZEL004W	TIGH2U Bezel	Bezel (painted)	Y	890813	12 <i>(order in multiples of 12)</i>
TLHTAM004W	TIGH2U Telco Alarms Module with LED pipe	Module, LED pipe	Y	890809	1
TLHFPIOBD04W	TIGH2U Front Panel I/O Board	Board	Y	890773	1

Production Spares/Accessories List (continued)

PID Order Code	Description	Contents	Included in Base Model (Y/N)	MM#	Min. Order Qty
Spares					
TLHSICBL004W	TIGH2U System Interconnect Cable Kit	Flex cable (SAS interface, front panel signals), front panel power cable, serial port cable, CD-ROM cable, alarm cable, TAM module cable	Y	891494	1
TLHFANSETW	TIGH2U Fan Assembly (set of 4)	80mm CPU fans (2), 40mm PCI fans (2), plastic fasteners (8)	Y	893601	1
NSCPWRDISBDW	NSC2U Power Distribution Board	Power distribution board, with integrated wire harness	Y	889805	1
NSCSASBSBDW	NSC2U T5000PAL Server board	Board	Y	889828	1
NSCSASBKPLNW	NSC2U SAS Backplane	Backplane	Y	889829	1
NSCBRIDGEBDW	NSC2U Bridge board	Board, insulator	Y	889852	1
NSCDVDENGTABW	NSC2U DVD Drive Engagement Tab	Blue plastic engagement bracket & black plastic locking clip, screws	Y	889845	1
FXX25HDDCAR	TIGW1U SAS HDD carrier	Carrier, black plastic filler, screws (4)	Y	881681	10 <i>(order in multiples of 10)</i>

Appendix A. Rack Mounting Options for 1U and 2U Intel® Communications Rack Mount Servers

Rack mounting kits for 2-post or 4-post, 19-inch or 23-inch racks are offered for this product. Please refer to the tables below for the correct options to suit your needs.

All rack mount kits listed are suitable for 1U and 2U Intel® Communications Rack Mount Servers. Installation instructions are included in each kit.

2-post Rack Mounting Kit Options							
Applicable kits:	Rack width		Post depth		Rack fastener hole spacing		
	19 inch	23 inch	3 inch	5 inch	EIA-Wide	EIA-Universal	ETSI
TMLCMOUNT21	●		●	●	●	●	
TMLPMOUNT41	●		●	●		●	
TMLPMOUNT51	●		●	●	●	●	
TMLPMOUNT52		●	●	●	●	●	●

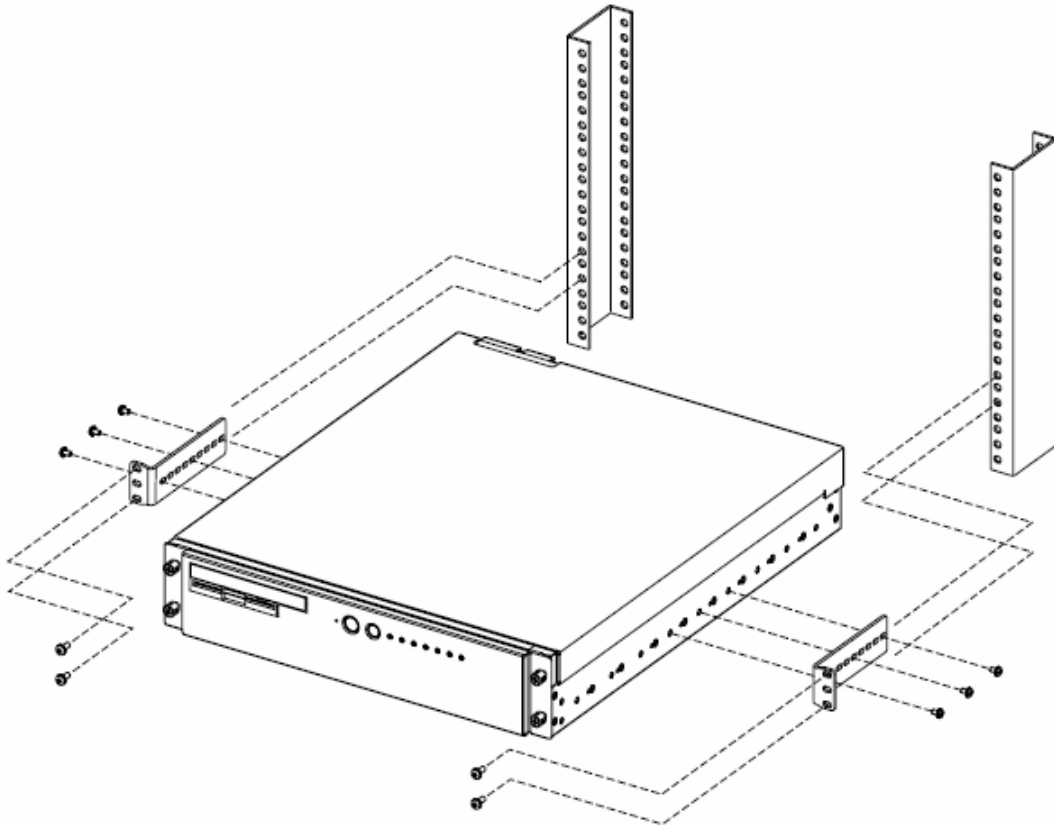
4-post Rack Mounting Kit Options							
Applicable kits:	Rack width		Front-post to rear-post distance		Rack fastener hole spacing		
	19 inch	23 inch	Min (inches)	Max (inches)	EIA-Wide	EIA-Universal	ETSI
TMLPMOUNT41	●		20	24		●	
TMLPMOUNT51	●		20	24	●	●	
TMLPMOUNT52		●	20	24	●	●	●
TMLPSLIDE01 [†]	●		22.5	28 or 34 ^{††}		●	

[†]The TMLPSLIDE01 kit contains server securing brackets. The rails and other options for mounting the server are available through other vendors such as Accuride (<http://www accuride.com/index2.php>).

^{††}34-inch span requires the optional Accuride "Long Bracket" kit.

TMLCMOUNT21

The TMLCMOUNT21 kit mounts Intel® Communication Rack Mount Servers to a 2-post, central office type, 19" wide rack. This kit consists of simple L-shaped brackets; which fasten to the sides of the server and to the rack.



TMLCMOUNT21

TMLPMOUNT41, TMLPMOUNT51 and TMLPMOUNT52

TMLPMOUNT41/51/52 series mounts Intel® Communication Rack Mount Servers to 2-post or 4-post racks.

TMLPMOUNT41 and TMLPMOUNT51 are used for mounting servers on 19" wide racks. These racks are considered standard EIA (universal hole spacing) racks.

TMLPMOUNT52 is used for mounting servers on 23" wide racks. These racks could be standard EIA (universal or wide hole spacing) or ETSI (European) racks.

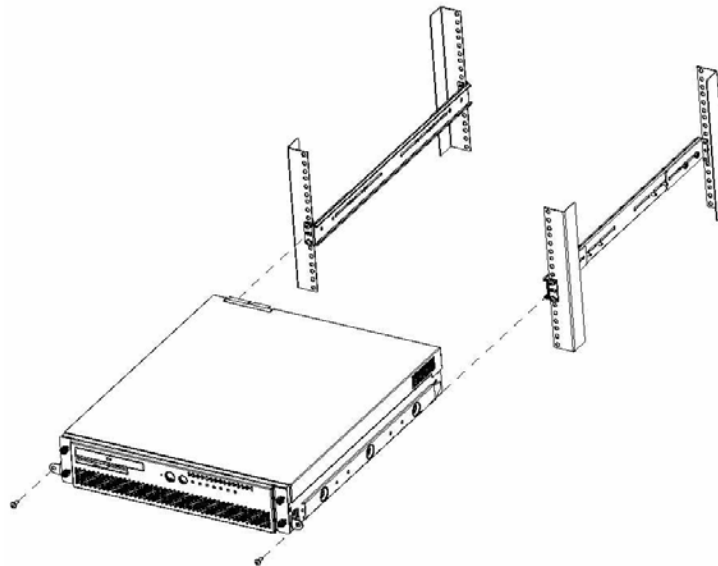
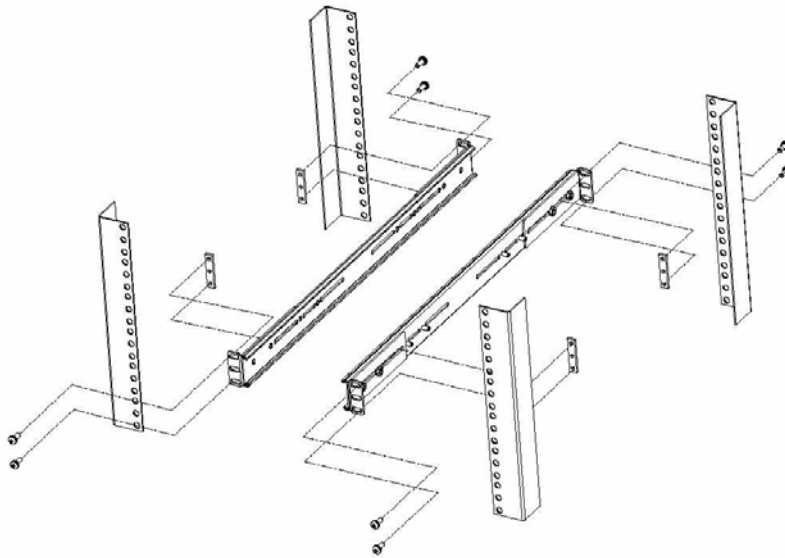
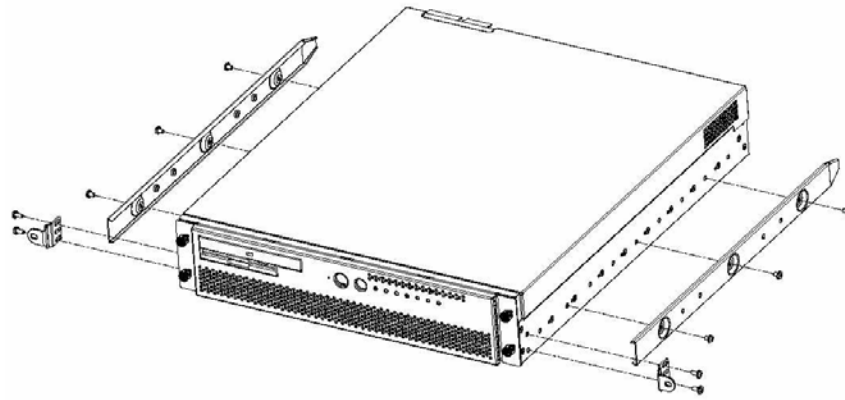
TMLPMOUNT41/51/52 series are designed with a slide-in rail-type system. Although the mounts are designed as rails, they are not sliding rails. This means the servers can be slid into the racks for installation purpose, but the rails are not designed to support a mounted server during service.

TMLPMOUNT4x/5x feature comparison						
	Slide pull-out locking feature	Slide interface material	4-post rack hole spacing	2U-tall nut bar	2-post chassis securing screw location	"HP Mulan rack interference"
TMLPMOUNT41	No ¹	Plastic strips ²	EIA-Universal	Not included	Side access ⁶	Interference
TMLPMOUNT51	Yes	Xylan coating ³	EIA-Wide or EIA-Universal ⁴	Included ⁵	Front access	No Interference
TMLPMOUNT52	Yes	Xylan coating ³	EIA-Wide, EIA-Universal or ETSI	Included ⁵	Front access	N/A

Notes:

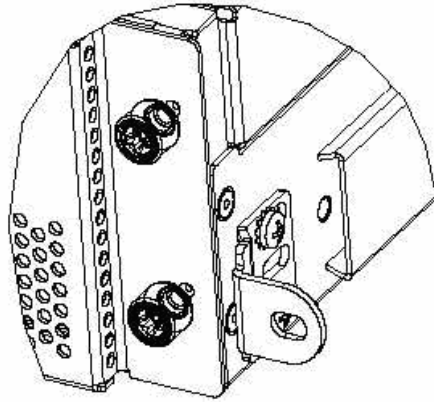
1. Extra care must be exercised with TMLPMOUNT41 to securely hold the server with one's hands when sliding it out of the rack, else the server may fall to the ground as its being removed.
2. Plastic strips on TMLPMOUNT41 have peeled off in some customer installations. Consequence: The parts are usable, but the server may have somewhat of a "scrape-in feel" rather than "slide in". Also, the rails will fit sloppier, so the side-located chassis securing screws may be difficult to align in 2-post installations. Replacement material is available from the plastic strip manufacturer.
3. Xylan is a tough, low-friction coating similar to Teflon.

4. EIA-Wide spacing doesn't have the interstitial hole that is present in EIA-Universal. TMLPMOUNT51 contains an adapter bracket to overcome this EIA-Wide issue.
5. This component (2U Nut Bar) enables installation of a rail kit into a 1U rack slot when there is already equipment installed both above and below that open slot.
6. The sides of the server must be accessible when using TMLPMOUNT41 in 2-post racks.

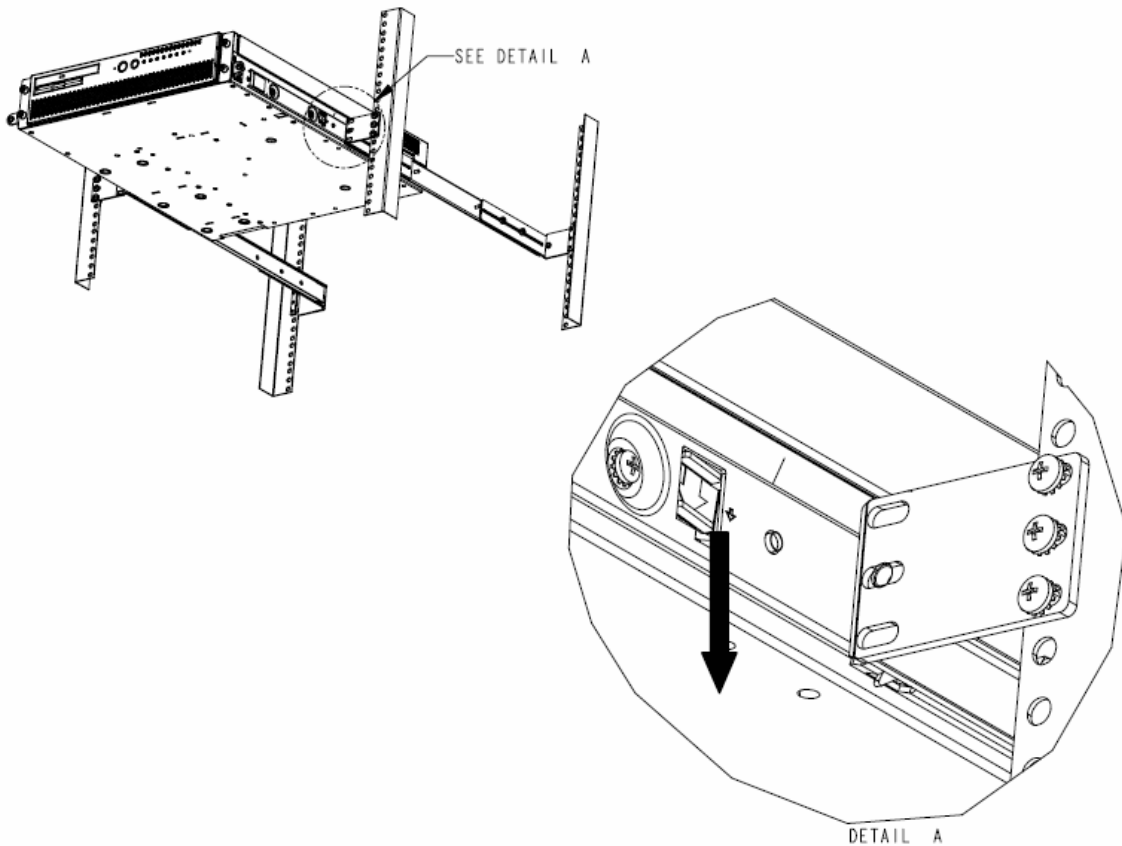


The diagrams above summarize the components and “slide-in rail-type” system of the TMLPMOUNT41. It can be adapted for a 2-post or 4-post installation.

The main difference between the TMLPMOUNT41 and TMLPMOUNT51/52 series is that the TMLPMOUNT41 series uses a screw to lock the server in place via the Universal Mounting Bracket, whilst the TMLPMOUNT51/52 series has an additional Slide Pull-Out Locking feature.



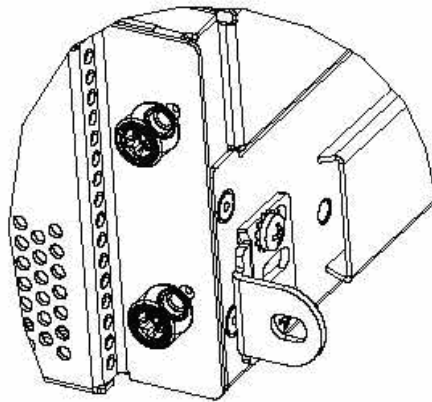
The Universal Front Mounting Bracket on the TMLPMOUNT41



The Slide Pull-Out Locking feature on the TMLPMOUNT51/52

TMLPSLIDE01

The TMLPSLIDE01 is an **accessory kit** designed for use in conjunction with slide rails to produce a rack mounted serviceable server. The TMLPSLIDE01 kit contains two Universal Front Mounting Brackets that secure the server to the front of the rack. The sliding rails and optional mounting brackets required to mount the server must be purchased through the channel. For example, the Accuride 22-inch Model 305A-LR slide rails are designed to mount a server for "in-rack service." This example would also use an Accuride mounting bracket kit and the TMLPSLIDE01.



Universal Front Mounting Bracket with securing tab

Note: Using slide rails may result in non-compliance with Seismic Zone 4 requirements of NEBS-3 certification.

Ordering Information

PID	Non-RoHS MM#	RoHS MM#	Minimum Order Quantity
TMLCMOUNT21	862501	881904	10
TMLPMOUNT41	838890	881907	10
TMLPMOUNT51	851760	881934	1
TMLPMOUNT52	851745	881935	1
TMLPSLIDE01	845583	881915	10

Customers should order RoHS items for shipments going to the European Union (EU).

Although these mounts have been designed for industry standard racks, please consult with your Intel Field Application or Sales Engineer before selecting racks for these servers.

Compatible rack mounting kits may also be obtained from 3rd party suppliers.